Claim Listing

1–12. (cancelled)

13. (new) A method of on-line finishing in a paper machine, comprising the steps of:

after a drying section, which ends actual production of a paper web on the paper machine, forming a first tail from the paper web and threading the first tail through a precalender forming a first finishing stage, the first finishing stage having a downstream end;

spreading the first tail to a full width web in the precalender;

precalendering the paper web in the precalender;

setting the precalender to production settings;

following setting the precalender to production settings, forming a second tail from the paper web and threading the second tail through a coater, forming a second finishing stage, the second finishing stage having a downstream end;

spreading the second tail to a full width web in the coater;

coating the paper web in the coater to form a coated paper web;

setting the coater to production settings; and

reeling the coated paper web.

14. (new) The method of claim 13, further comprising the step of tensioning and holding the paper web in the precalender with a draw point formed by a single contact at the downstream end of the first finishing stage.

15. (new) The method of claim 14, further comprising the step of determining selected paper web properties at or prior to the draw point of the first finishing stage.

16. (new) The method of claim 13, further comprising the step of tensioning and holding the paper web in the coater with a draw point formed by a single contact at the downstream end of the second finishing stage.

17. (new) The method of claim 16, further comprising the step of determining selected paper web properties at or prior to the draw point of the second finishing stage.

18. (new) The method of claim 15, further comprising the step of using the determined selected paper web properties to adjust the precalender to selected production settings.

19. (new) The method of claim 17, further comprising the step of using the determined selected paper web properties to adjust the coater to selected production settings.

20. (new) The method of claim 13, further comprising the stepa of:

following setting the coater to production settings, and before reeling the paper web, forming a third tail from the paper web and threading the third tail through the calender, forming a third finishing stage end;

spreading the third tail to a full width web in a calender;

calendering the paper web in the calender; and

setting the calender to production settings, followed by the step of reeling the paper web.

21. (new) The method of claim 13, further comprising the step of changing properties of at least one of the first tail and the second tail, while forming said first tail and said second tail, so as to ensure successful threading of at least one of the first tail and the second tail.

22. (new) A paper machine incorporating on line finishing, comprising:

a paper machine having a dryer section;

a first finishing stage, after the dryer section comprising: a precalender; first cutting equipment positioned within an open draw for forming a tail from a fully wide paper web; tail threading equipment arranged to take a formed tail through the first finishing stage; a first draw point forming a single contact for, tensioning and holding the paper web, in the first finishing stage and, prior to the draw point, a plurality of measuring elements; and a controller in data receiving relation to the measuring elements, and in controlling relation to the precalender; wherein the the first finishing stage is arranged so that the precalender can be adjusted to selected production settings while running a full with web; and

a second finishing stage, after the first finishing stage comprising: a coater; second cutting equipment for forming a tail from a fully wide paper web; tail threading equipment arranged to take a formed tail through the second finishing stage; a second draw point forming a single contact for tensioning and holding the paper web, and in the second finishing stage prior to the draw point, a plurality of measuring elements; a controller in data receiving relation to the measuring elements, and in controlling relation to the coater; wherein the second finishing stage is arranged so that the coater can be adjusted to selected production settings while running a full with web.

23. (new) The apparatus of claim 22, wherein the first cutting equipment is arranged prior to the draw point and is a water cutter.

24. (new) The apparatus of claim 22, wherein the second cutting equipment is arranged prior to the draw point and is a water cutter.

25. (new) The apparatus of claim 22, wherein the first draw point forming a single contact is a roll nip formed between two rolls.

26. (new) The apparatus of claim 25, wherein one of said two rolls forming the roll nip is a counter roll adapted to precalendering, and further comprising a separate auxiliary roll engaging the counter roll.

27. (new) The apparatus of claim 25, wherein the rolls of the roll nip are both auxiliary rolls arranged separate from equipment included in the finishing stage.

28. (new) The apparatus of claim 25, wherein the fabric transfer is formed between one dryer cylinder and a dryer wire arranged in contact with it.

29. (new) The apparatus of claim 22, wherein the second draw point forming a single contact is a roll nip formed between two rolls.

30. (new) The apparatus of claim 29, wherein one of said two rolls forming the roll nip is a counter roll adapted to precalendering, and further comprising a separate auxiliary roll engaging the counter roll.

31. (new) The apparatus of claim 29, wherein the rolls of the roll nip are both auxiliary rolls arranged separate from equipment included in the finishing stage.

32. (new) The apparatus of claim 22, wherein the first draw point forming a single contact is a fabric transfer.

33. (new) The apparatus of claim 22, wherein the second draw point forming a single contact is a fabric transfer.

34. (new) A method of on-line finishing in a paper machine, comprising the steps of:

after a drying section which ends actual production of a paper web on the paper machine, forming a first tail from the paper web and threading the first tail through a precalender forming a first finishing stage, the first finishing stage tensioning and holding the paper web with a first draw point formed by a single contact, the first draw point defining a first downstream end;

spreading the first tail to a full width web in the precalender;

precalendering the paper web in the precalender;

determining selected paper web properties at or prior to the first draw point;

setting the precalender to production settings based on the determined paper web properties;

in the first finishing stage, until the precalender is set to the production settings, guiding the paper web to broke treatment immediately after the first draw point;

following setting the precalender to production settings, forming a second tail from the paper web and threading the second tail through a coater, forming a second finishing stage, the second finishing stage tensioning and holding the paper web with a second draw point formed by a single contact, the second draw point defining a second downstream end;

spreading the second tail to a full width web in the coater;

coating the paper web in the coater to form a coated paper web;

determining selected coated paper web properties at or prior to the second draw point;

setting the coater to production settings based on the determined coated paper web properties;

in the second finishing stage, until the coater is set to the production settings guiding the coated paper web to broke treatment immediately after the second draw point; and

reeling the coated paper web.

35. (new) The method of claim 34, further comprising the steps of:

following setting the coater to production settings, and before reeling the paper web, forming a third tail from the paper web and threading the third tail through a calender, forming a third finishing stage end;

spreading the third tail to a full width web in the calender;

calendering the paper web in the calender; and

setting the calender to production settings, followed by the step of reeling the paper web.

36. (new) The method of claim 34, further comprising the step of changing properties of at least one of the first tail and the second tail, while forming said first tail and said second tail, so as to ensure successful threading of at least one of the first tail and the second tail.